

V600-series Electromagnetic FA ID System Characteristics

R/W Head and DC Characteristics

Superior Environmental Resistance

The DCs exceed IEC IP67 standards, so they can be used in harsh operating environments. Besides withstanding water droplets, the DCs have excellent resistance to vibration and shock. The R/W Heads also have superior environmental resistance for reliable operation in harsh conditions.

■ Battery-less Data Carriers Overwrite Data 100,000 times

Each memory address in the DC can be overwritten 100,000 times. Once written, data can be retained for 10 years.

EEPROM Memory is Used

Non-volatile EEPROM memory is used, so a battery is not required. A memory capacity of 256 bytes (254 usable bytes) is provided.

■ Built-in-battery Data Carriers Ample Memory Capacity

A large RAM memory is built-in to store large amounts of data. There will still be room for additional data after the manufacturing data (such as the product model, production number, manufacturing instructions, assembly instructions, and destination) have been stored.

■ Replaceable-battery Data Carriers Easily Replaceable Watch Batteries are Used

Batteries can be replaced easily by removing the battery cover with a coin. The CR2016 batteries are also readily available.

Battery Life of 2 years with Unlimited Memory Access

The battery life (at 25°C) is 2 years, regardless of the number of times data is transmitted. Since the battery life is unaffected by the number of read/write transmissions, this type of DC is perfect for applications where memory must be accessed often.

ID Controller Characteristics

Choose from 11 Models of ID Controller to Match the Size and Style of your FA ID System

ID Controllers are available that can connect to multi-purpose computers through a serial interface, while others can connect to Programmable Controllers (PCs) through a Peripheral Interface, and ID Sensor Units can be mounted directly in an OMRON PC as Special I/O Units. Compact hand-held versions are also available for easy maintenance at the work site. This wide selection allows you to choose the best model to suit the size and style of your FA ID system.

Serial Interface Connection

ID Controllers are available with RS-232C and RS-422 interfaces. The RS-232C interface allows connection to a mainframe factory computer or personal computer and the RS-422 interface allows up to 16 ID Controllers to be connected to a single computer. Up to 2K bytes of data can be read or 256 bytes written at one time through a serial interface. Data can also be transmitted efficiently to two R/W Heads using the independent polling autocommand.

Peripheral Interface Connection

These ID Controllers are available with PNP and NPN outputs and are useful when you want a PC to have direct control over the ID Controller. The peripheral interface can be also used to connect to most PCs, not just OMRON PCs.

Direct Connection to OMRON PCs

ID Sensor Units (C500 and C200H Models) can be mounted directly to OMRON's C-series and CV-series PCs as Special I/O Units. A long-distance-transmission C500 Sensor Unit is available which can cover a wide area from a single PC. A R/W Head can be extended up to 200 m away when an ID Adapter is used.

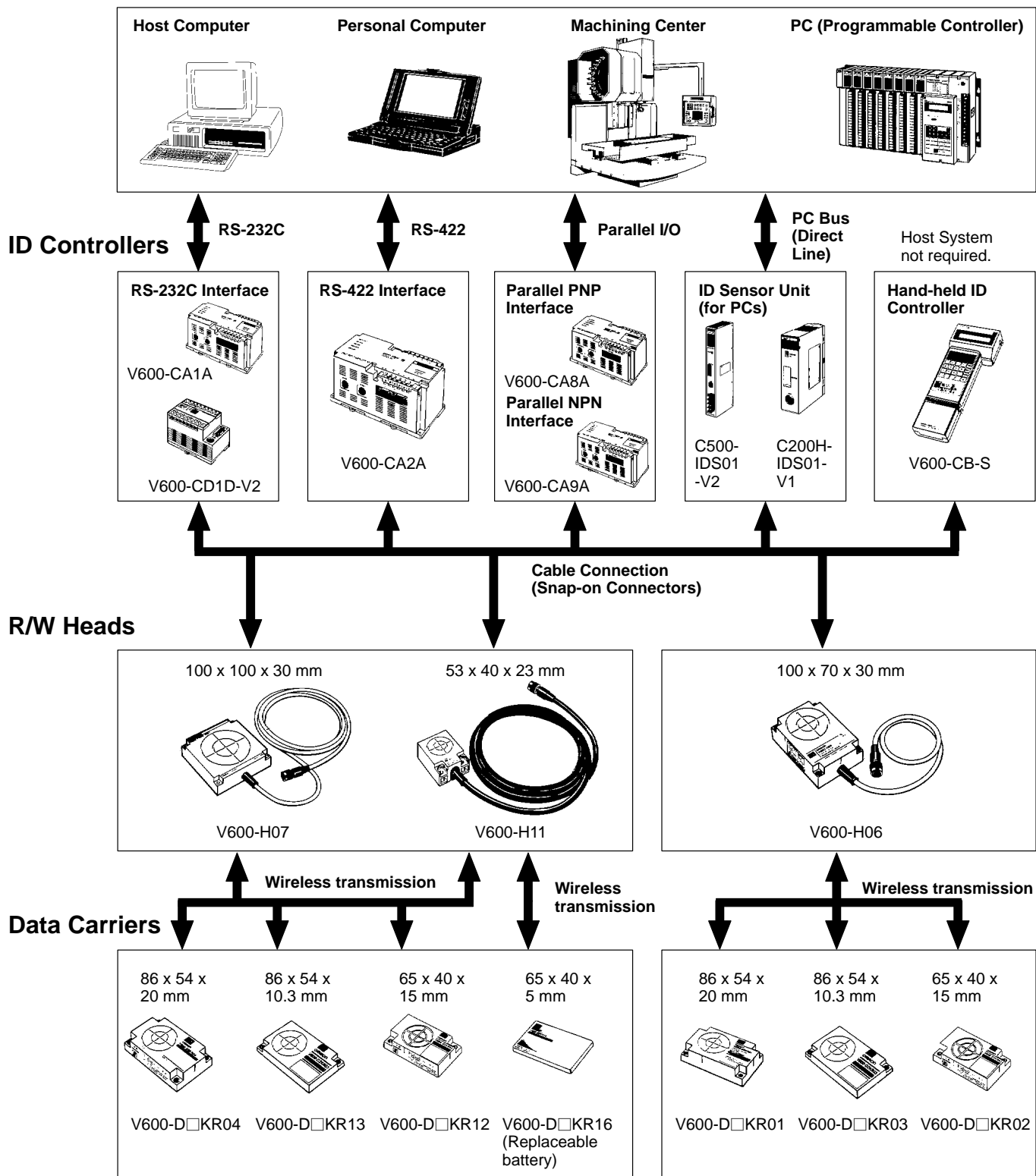
The Data Carriers can use either ASCII code or hexadecimal values, and all of the communications commands are in ASCII code, so it is easy to control the FA ID System from the PC program.

Diagnostic Functions can prevent system shutdowns.

The ID Controller monitors the status of communications between the R/W Head and Data Carriers and outputs an error code if an error occurs. The ID Controller can store data on the 30 most recent errors or store statistical error data. The error data can be read during daily maintenance or if a transmission error shuts down the FA ID system. Data can be read from V600-CA□A ID Controllers with a Monitor Unit, from V600-CD1D ID Controllers with a host command, and from ID Sensor Units with a Hand-held Programming Console.

System Configuration for Built-in-battery Data Carriers

Host System

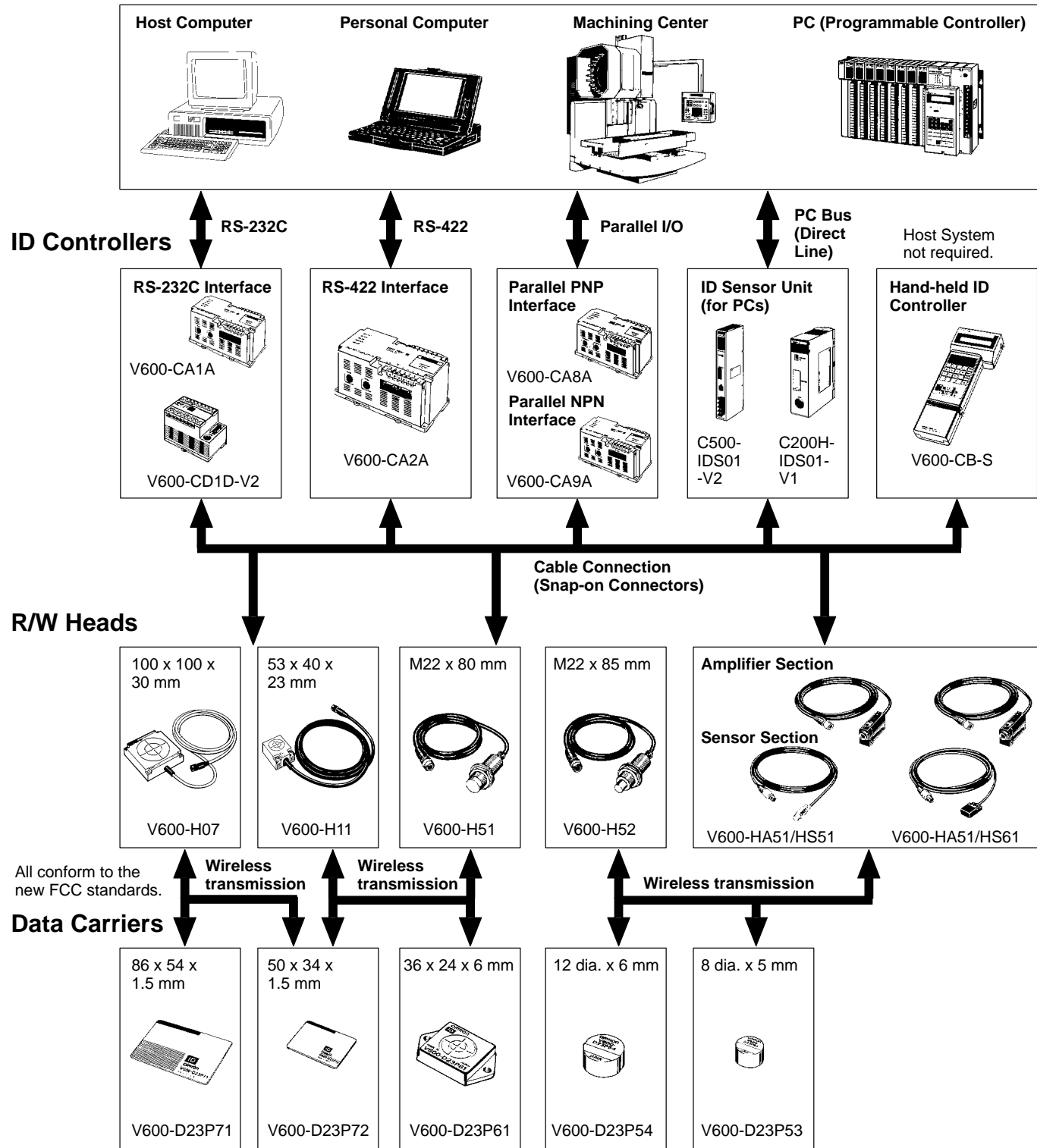


Note:

- As of June 1, 1994, export of V600-H06 to the U.S. will be prohibited. Any of those products in use at that time can continue to be used.
- The V600-H12 R/W Head and V600D□KR11 Data Carrier are available and are FCC-approved versions of the V600-H06 R/W Head and V600-D□KR01 Data Carrier. There is no difference in the communication distance between the V600-H12 and V600-H11. We recommend the V600-H11 or V600-H07. Contact your OMRON representative for details.

System Configuration for Battery-less Data Carriers

Host System




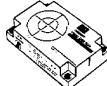



Note: The EEPROM Data Carriers can be used with the ID Controllers and ID Sensor Units listed below:

CA1A and CA2A ID Controllers with Version 5.0 or higher software; CD1D ID Controllers with Version 2.0 or higher software (CD1D-V2)
Hand-held ID Controllers with Version 2.0 or higher software; C200H-IDS01-V1, C500-IDS01-V2, and C500-IDS02-V1 ID Sensor Units



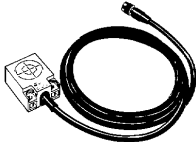
■ Specifications for Built-in-battery DCs

Built-in-battery Data Carriers

Item	Standard	Compact	Thin	Intermediate Range	Compact with Replaceable Battery
Model	V600-D□KR01 	V600-D□KR02/ D□KR12 	V600-D□KR03/ D□KR13 	V600-D□KR04 	V600-D2KR16 
Memory Capacity	2K bytes/8K bytes				2K bytes
Memory type	SRAM				
Transmission distance	Refer to <i>page 6, Transmission Distance Specifications for Built-in-battery DCs</i>				
Battery life (see note)	Refer to <i>page 6, Battery Life</i>				2 years (at 25°C)
Number of reads/writes	Unlimited				Unlimited (Does not affect battery life)
Transmission error detection	16-bit CRC in both directions				
Ambient temperature	Operating: -25° to 70°C Storage: -40° to 70°C				Operating: 0° to 50°C Storage: -15° to 70°C
Ambient humidity	Operating: 35% to 95% Storage: 35% to 95%				Operating: 35% to 85% Storage: 35% to 95%
Enclosure rating	IEC IP67				IEC IP50 (dustproof)
Vibration resistance (destruction)	10 to 55 Hz, 1.5-mm double amplitude for 2 hrs each in X, Y, and Z directions				10 to 150 Hz, 1.5-mm double amplitude, 9.8m/s ² acceleration (approx. 10G) for 30 min each in X, Y, and Z directions (90 min total)
Shock resistance (destruction)	1,000 m/s ² (approx. 100G) 3 times each in X, Y, and Z directions				294 m/s ² (approx. 30G) 3 times each in X, Y, and Z directions (18 times total)
Weight	Approx. 170 g	Approx. 70 g		Approx. 160 g	Approx. 15 g

Note: A low battery detection function is built-in.

Read/Write (R/W) Heads

Item	V600-H06 	V600-H07 	V600-H11 
Transmission frequency	500 kHz	530 kHz	
Ambient temperature	Operating: -25° to 70°C Storage: -40° to 85°C		Operating: -10° to 60°C Storage: -25° to 75°C
Ambient humidity	Operating: 35% to 95% Storage: 35% to 95%		
Insulation resistance	50 MΩ between cable terminals and case		
Dielectric strength	500 VAC, 50/60 Hz for 1 min between cable terminals and case		1,000 VAC, 50/60 Hz for 1 min between cable terminals and case
Enclosure rating	IEC IP67		
Vibration resistance (destruction)	10 to 55 Hz 1.5-mm double amplitude for 2 hrs each in X, Y, and Z directions		10 to 500 Hz, 2.0-mm double amplitude for 30 min each in X, Y, and Z directions
Shock resistance	Destruction: 490 m/s ² (approx. 50G) 3 times each in X, Y, and Z directions		
Cable length (see note)	Standard lengths of 0.5 m, 2 m, 5 m, and 10 m		
Wireless transmission error detection	16-bit CRC in both directions		
Indicators	Power: red	Power: green; transmission: orange	
Weight	Approx. 1 kg (with 10-m cable)	Approx. 1.1 kg (with 10-m cable)	Approx. 650 g (with 10-m cable)

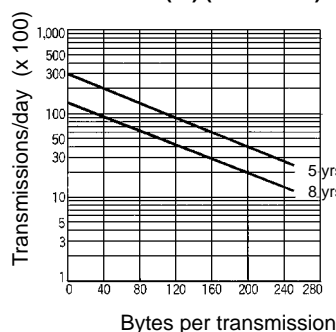
Note: Extension cables are also available. The maximum cable length is 30.5 m for the V600-H06/H07 and 50.5 m for the V600-H11.

Battery Life

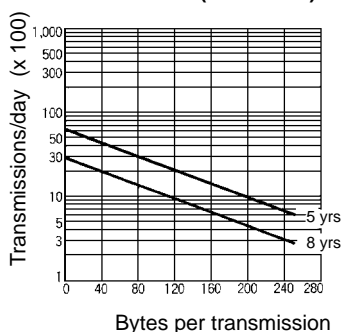
(Minimum life in the -10°C to 55°C temperature range)

The following graphs show the relationship between the number of bytes read/written and the battery life.

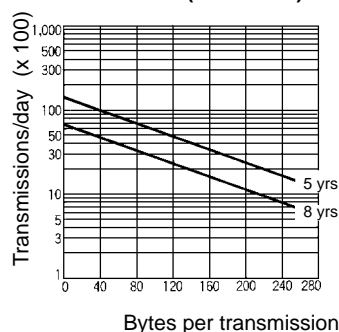
V600-D□KR01(-T) (Reference)



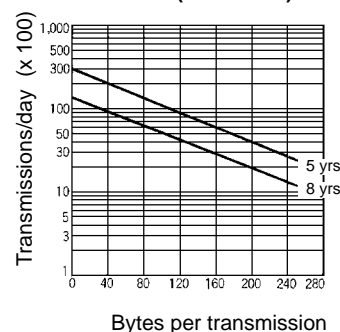
V600-D□KR02 (Reference)



V600-D□KR03 (Reference)

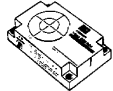
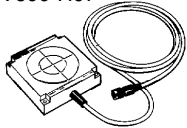





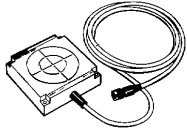



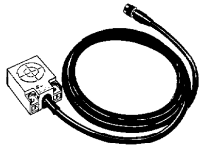

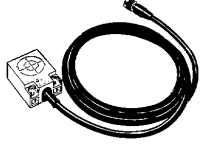

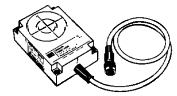


V600-D□KR04 (Reference)



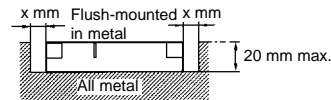
■ Transmission Distance Specifications for Built-in-battery DCs

Refer to the section on installation in the Data Carrier or R/W Head's *Operation Manual* or *Supplement* for more details.

Recommended combinations		Installation		Controller mode	Transmission distance
Data Carrier	R/W Head				
V600-D□KR04 (non-shielded type) 	V600-H07 	Stationary	Flush-mounted in metal	Irrelevant	(see note)
			Surface-mounted on metal		10 to 100 mm (max. axial offset ± 10 mm)
		Moving	Flush-mounted in metal		(see note)
			Surface-mounted on metal		50 to 100 mm (max. axial offset ± 10 mm)
	V600-H11 	Stationary	Flush-mounted in metal	Irrelevant	10 to 45 mm (max. axial offset ± 10 mm)
			Surface-mounted on metal		10 to 65 mm (max. axial offset ± 10 mm)
		Moving	Flush-mounted in metal		30 to 45 mm (max. axial offset ± 10 mm)
			Surface-mounted on metal		30 to 65 mm (max. axial offset ± 10 mm)
V600-D□KR13 	V600-H07 	Stationary	Flush-mounted in metal	Irrelevant	10 to 30 mm (max. axial offset ± 10 mm)
			Surface-mounted on metal		10 to 35 mm (max. axial offset ± 10 mm)
		Moving	Flush-mounted in metal		20 to 30 mm (max. axial offset ± 10 mm)
			Surface-mounted on metal		20 to 35 mm (max. axial offset ± 10 mm)
	V600-H11 	Stationary	Flush-mounted in metal	Irrelevant	10 to 30 mm (max. axial offset ± 10 mm)
			Surface-mounted on metal		10 to 30 mm (max. axial offset ± 10 mm)
		Moving	Flush-mounted in metal		15 to 30 mm (max. axial offset ± 10 mm)
			Surface-mounted on metal		15 to 30 mm (max. axial offset ± 10 mm)
V600-D□KR12 	V600-H07 	Stationary	Flush-mounted in metal	Irrelevant	10 to 50 mm (max. axial offset ± 10 mm)
			Surface-mounted on metal		10 to 60 mm (max. axial offset ± 10 mm)
		Moving	Flush-mounted in metal		25 to 50 mm (max. axial offset ± 10 mm)

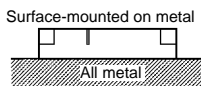
Recommended combinations		Installation		Controller mode	Transmission distance	
Data Carrier	R/W Head					
V600-D□KR12 	V600-H11 		Surface-mounted on metal		25 to 60 mm (max. axial offset ±10 mm)	
		Stationary	Flush-mounted in metal	Irrelevant	5 to 40 mm (max. axial offset ±10 mm)	
			Surface-mounted on metal		5 to 45 mm (max. axial offset ±10 mm)	
		Moving	Flush-mounted in metal		25 to 40 mm (max. axial offset ±10 mm)	
			Surface-mounted on metal		25 to 45 mm (max. axial offset ±10 mm)	
V600-D□KR16 	V600-H11 	Stationary	Surface-mounted on metal	Irrelevant	2 to 15 mm (max. axial offset ±10 mm)	
		Moving			8 to 15 mm (max. axial offset ±10 mm)	
V600-D□KR01 	V600-H06 	Stationary	Flush-mounted in metal	Irrelevant	10 to 35 mm (max. axial offset ±10 mm)	
			Surface-mounted on metal		15 to 40 mm (max. axial offset ±10 mm)	
		Moving	Flush-mounted in metal		20 to 35 mm (max. axial offset ±10 mm)	
			Surface-mounted on metal		25 to 40 mm (max. axial offset ±10 mm)	
V600-D□KR03 			Stationary	Flush-mounted in metal	Irrelevant	10 to 35 mm (max. axial offset ±10 mm)
		Surface-mounted on metal		15 to 40 mm (max. axial offset ±10 mm)		
		Moving	Flush-mounted in metal	20 to 35 mm (max. axial offset ±10 mm)		
			Surface-mounted on metal	25 to 40 mm (max. axial offset ±10 mm)		
V600-D□KR02 			Stationary	Flush-mounted in metal	Irrelevant	5 to 25 mm (max. axial offset ±10 mm)
		Surface-mounted on metal		10 to 30 mm (max. axial offset ±10 mm)		
		Moving	Flush-mounted in metal	15 to 25 mm (max. axial offset ±10 mm)		
			Surface-mounted on metal	20 to 30 mm (max. axial offset ±10 mm)		

Note: When a V600-D□KR04 is flush-mounted in metal, the read/write distance depends on the distance (x) between the side of the DC and the metal surface.

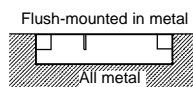
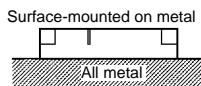


Conditions for DC Installation

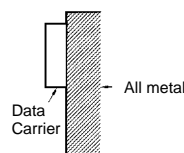
V600-D□KR04



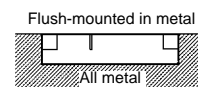
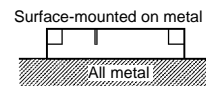
V600-D□KR12/ D□KR13



V600-D□KR16








V600-D□KR01/D□KR02/ D□KR03




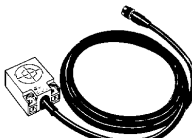


Note: The listed specifications are also valid when the DC is surface-mounted on a material other than metal.

■ Specifications for Battery-less DCs

Built-in-battery Data Carriers




Item	Round Super-compact	Round Compact	Rectangular Compact	Card-type	Half-size Card-type
Model	V600-D32P53 	V600-D23P54 	V600-D23P61 	V600-D23P71 	V600-D23P72 
Memory Capacity	256 bytes				
Memory type	EEPROM (non-volatile memory)				
Transmission distance	Refer to <i>page 9, Transmission Distance Specifications for Battery-less DCs</i>				
Data retention time	10 years (Data is retained for 10 years after it is written)				
Number of overwrites	Each address can be overwritten 300,000 times at an ambient temperature of 40°C max. or 100,000 times at an ambient temperature of 40°C min.; The number of reads is unlimited				
Transmission error detection	16-bit CRC in both directions				
Ambient temperature	Operating: -25° to 70°C Storage: -40° to 85°C (including data storage)			Operating: -10° to 70°C Storage: -20° to 110°C	
Ambient Humidity	Operating: 35% to 95%				
Enclosure rating	IEC IP67, JEM IP67G				
Vibration resistance (destruction)	10 to 2,000 Hz, 1.5-mm single amplitude, with 2 sweeps of 15 min each in 3 directions				10 to 2,000 Hz, 1.5-mm double amplitude, 29.4 m/s ² acceleration (approx. 10G) for 30 min each in 3 direction (90 min total)
Shock resistance	Destruction: 981 m/s ² (approx. 100G) 3 times each in 3 directions (18 times total)				
Weight	Approx. 0.4 g	Approx. 1.0 g	Approx. 5.8 g	Approx. 15 g	Approx. 5 g

Read/Write (R/W) Heads

Item	V600-H07	V600-H11	V600-H51	V600-H52
				
Transmission frequency	530 kHz			
Ambient temperature	Operating: -25° to 70°C Storage: -40° to 85°C		Operating: -10° to 60°C Storage: -25° to 75°C	
Ambient humidity	Operating: 35% to 95% Storage: 35% to 95%			
Insulation resistance	50 MΩ between cable terminals and case			
Dielectric strength	500 VAC, 50/60 Hz for 1 min between cable terminals and case		1,000 VAC, 50/60 Hz for 1 min between cable terminals and case	
Enclosure rating	IEC IP67			
Vibration resistance (destruction)	10 to 55 Hz 1.5-mm double amplitude for 2 hrs each in X, Y, and Z directions	10 to 500 Hz, 2.0-mm double amplitude for 30 min each in X, Y, and Z directions	10 to 500 Hz, 2.0-mm double amplitude, with 3 sweeps of 11 min each in X, Y, and Z directions	
Shock resistance	Destruction: 490 m/s ² (approx. 50G) 3 times each in X, Y, and Z directions			
Cable length (see note)	Standard lengths of 0.5 m, 2 m, 5 m, and 10 m.			
Wireless transmission error detection	16-bit CRC in both directions			
Indicators	Power: green; transmission: orange			
Weight	Approx. 1.1 kg (with 10-m cable)		Approx. 650 g (with 10-m cable)	




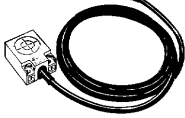


Note: Extension cables are also available. The maximum cable length is 30.5 m for the V600-H07 and 50.5 m for the V600-H11/H51/H52.



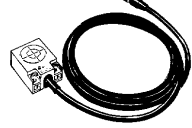








R/W Heads (with Separate Amplifier)

Item	Sensor section		Amplifier section
	V600-HS51 	V600-HS61 	V600-HA51 
Transmission frequency	530 kHz		---
Ambient temperature	Operating: -10° to 60°C Storage: -25° to 75°C		Operating: -10° to 60°C Storage: -25° to 75°C
Ambient humidity	Operating: 35% to 95%		
Insulation resistance	50 MΩ between cable terminals and case		
Dielectric strength	1,000 VAC 50/60 Hz for 1 min between cable terminals and case		
Enclosure rating	IEC IP67, JEM IP67G		IEC IP66
Vibration resistance (destruction)	10 to 2,000 Hz, 1.5-mm double amplitude, with 2 sweeps of 15 min each in 3 directions		Installed in panel: 10 to 2,000 Hz, 1.5-mm single amplitude, with 2 sweeps of 15 min each in 3 directions DIN Track installation: 10 to 500 Hz, 1.0-mm single amplitude, with 3 sweeps of 11 min each in 3 directions
Shock resistance (destruction)	981 m/s ² (approx. 100G) 3 times each in 3 directions (18 times total)		490 m/s ² (approx. 50G) 3 times each in 3 directions (18 times total)
Cable length	2 m (fixed) between sensor and amplifier		Standard lengths of 2 m, 5 m, and 10 m between amplifier and controller (see note)
Wireless transmission error detection	16-bit CRC in both directions		
Indicators	---		Power: green; transmission: orange
Weight	Approx. 70 g (with 2-m cable)		Approx. 650 g (10-m cable)

Note: Extension cables are also available. The maximum cable length is 50 m for the V600-HA51.

■ Transmission Distance Specifications for Battery-less DCs

Recommended combinations		Installation		Controller mode	Transmission distance
Data Carrier	R/W Head				
V600-D23P71 	V600-H07 	Stationary	Read/Write distance	Irrelevant	10 to 70 mm (max. axial offset ±10 mm)
		Moving			30 to 60 mm (max. axial offset ±10 mm)
V600-D23P72 	V600-H11 	Stationary	Read/Write distance	Irrelevant	5 to 35 mm (max. axial offset ±10 mm)
		Moving			15 to 35 mm (max. axial offset ±10 mm)
	V600-H07 	Stationary	Read/Write distance	Irrelevant	10 to 50 mm (max. axial offset ±10 mm)
		Moving			25 to 40 mm (max. axial offset ±10 mm)
	V600-H51 	Stationary	Read/Write distance	Irrelevant	2 to 25 mm (max. axial offset ±10 mm)
		Moving			10 to 25 mm (max. axial offset ±10 mm)

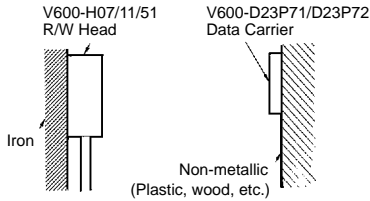
Recommended combinations		Installation		Controller mode	Transmission distance	
Data Carrier	R/W Head					
V600-D23P61 	V600-H51 	Stationary	Read distance	Transmission distance priority	1 to 16 mm (max. axial offset ± 2 mm)	
				Transmission time priority	1 to 14 mm (max. axial offset ± 2 mm)	
			Write distance	Irrelevant	1 to 14 mm (max. axial offset ± 2 mm)	
		Moving	Read distance	Transmission distance priority	7 to 16 mm (max. axial offset ± 2 mm)	
				Transmission time priority	7 to 14 mm (max. axial offset ± 2 mm)	
			Write distance	Irrelevant	7 to 14 mm (max. axial offset ± 2 mm)	
	V600-H11 	Stationary	Read distance	Transmission distance priority	2 to 19 mm (max. axial offset ± 10 mm)	
				Transmission time priority	2 to 16 mm (max. axial offset ± 10 mm)	
			Write distance	Irrelevant	2 to 16 mm (max. axial offset ± 10 mm)	
		Moving	Read distance	Transmission distance priority	12 to 19 mm (max. axial offset ± 10 mm)	
				Transmission time priority	12 to 16 mm (max. axial offset ± 10 mm)	
			Write distance	Irrelevant	12 to 16 mm (max. axial offset ± 10 mm)	
V600-D23P53 	V600-HS51 	Stationary	Read distance	Transmission distance priority	0.5 to 4.0 mm (max. axial offset ± 2 mm)	0.5 to 4.5 mm (max. axial offset ± 1 mm)
				Transmission time priority	0.5 to 3.0 mm (max. axial offset ± 2 mm)	0.5 to 3.5 mm (max. axial offset ± 1 mm)
			Write distance	Irrelevant	0.5 to 3.0 mm (max. axial offset ± 2 mm)	0.5 to 3.5 mm (max. axial offset ± 1 mm)
	V600-HS61 	Stationary	Read distance	Transmission distance priority	0.5 to 4.0 mm (max. axial offset ± 2 mm)	0.5 to 4.5 mm (max. axial offset ± 1 mm)
				Transmission time priority	0.5 to 3.0 mm (max. axial offset ± 2 mm)	0.5 to 3.5 mm (max. axial offset ± 1 mm)
			Write distance	Irrelevant	0.5 to 3.0 mm (max. axial offset ± 2 mm)	0.5 to 3.5 mm (max. axial offset ± 1 mm)
	V600-H52 	Stationary	Read distance	Transmission distance priority	0.5 to 4.0 mm (max. axial offset ± 2 mm)	0.5 to 4.5 mm (max. axial offset ± 1 mm)
				Transmission time priority	0.5 to 3.0 mm (max. axial offset ± 2 mm)	0.5 to 3.5 mm (max. axial offset ± 1 mm)
			Write distance	Irrelevant	0.5 to 3.0 mm (max. axial offset ± 2 mm)	0.5 to 3.5 mm (max. axial offset ± 1 mm)
V600-D23P54 	V600-HS51 	Stationary	Read distance	Transmission distance priority	0.5 to 6.0 mm (max. axial offset ± 2 mm)	0.5 to 6.5 mm (max. axial offset ± 1 mm)
				Transmission time priority	0.5 to 5.5 mm (max. axial offset ± 2 mm)	0.5 to 6.0 mm (max. axial offset ± 1 mm)
			Write distance	Irrelevant	0.5 to 5.0 mm (max. axial offset ± 2 mm)	0.5 to 5.5 mm (max. axial offset ± 1 mm)
	V600-HS61 	Stationary	Read distance	Transmission distance priority	0.5 to 6.5 mm (max. axial offset ± 2 mm)	0.5 to 7.0 mm (max. axial offset ± 1 mm)
				Transmission time priority	0.5 to 5.5 mm (max. axial offset ± 2 mm)	0.5 to 6.0 mm (max. axial offset ± 1 mm)
			Write distance	Irrelevant	0.5 to 5.5 mm (max. axial offset ± 2 mm)	0.5 to 6.0 mm (max. axial offset ± 1 mm)
	V600-H52 	Stationary	Read distance	Transmission distance priority	0.5 to 6.5 mm (max. axial offset ± 2 mm)	0.5 to 7.0 mm (max. axial offset ± 1 mm)
				Transmission time priority	0.5 to 5.5 mm (max. axial offset ± 2 mm)	0.5 to 6.0 mm (max. axial offset ± 1 mm)
			Write distance	Irrelevant	0.5 to 5.5 mm (max. axial offset ± 2 mm)	0.5 to 6.0 mm (max. axial offset ± 1 mm)

- Note:** 1. The transmission distance/transmission time priority mode setting can be made only with the lower-level communications mode setting switch with a serial-interface Controller or ID Sensor Unit. With parallel-interface Controllers, the mode setting is always transmission distance priority.
2. With Data Carriers that can be installed on metal surfaces (V600-D23P61/D23P53/D23P54), the transmission distance will vary depending on the metal used. The figures given in the table above are valid for iron (SC, SS). Refer to the section on installation in the Data Carrier or R/W Head's *Operation Manual* or *Supplement* for more details.

Conditions for DC and R/W Head Installation

V600-D23P71/D23P72

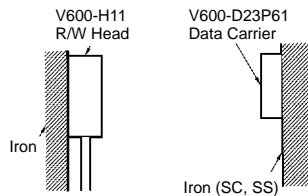
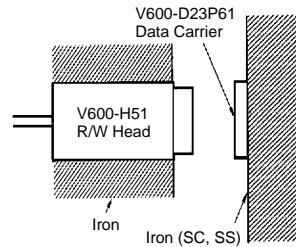
These Data Carriers are for installation on non-metallic surfaces only.



Note: Data transmission will be impossible if the DC is installed directly on a metal surface. The transmission distances will be reduced to 70% of the listed figures if the DC is 10 mm from the metal surface, and 90% of the listed figures if the DC is 20 mm from the metal surface. Refer to the section on installation in the Data Carrier or R/W Head's *Operation Manual* or *Supplement* for more details.

V600-D23P61

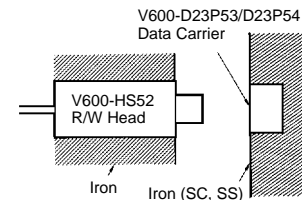
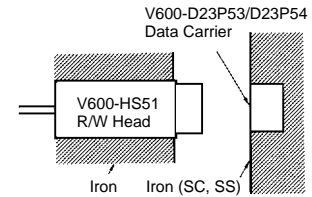
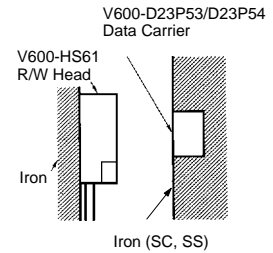
These Data Carriers can be installed on all surfaces.



Note: The listed transmission distances apply for installation on metallic and non-metallic surfaces.

V600-D23P53/D23P54

These Data Carriers are for installed in metallic only.

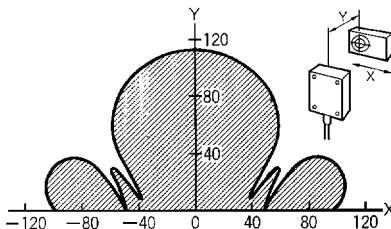


Note: The listed transmission distances apply for installation on metallic and non-metallic surfaces.

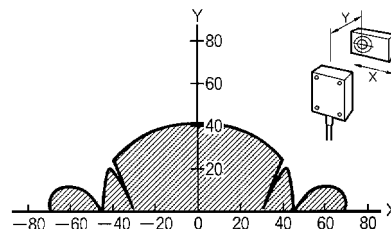
■ Transmission Range Graphs (Examples)

Built-in-battery DCs

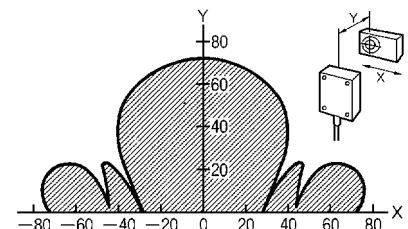
V600-D□KR04 & V600-H07



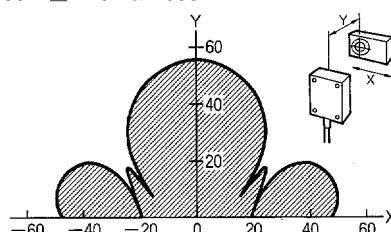
V600-D□KR13 & V600-H07



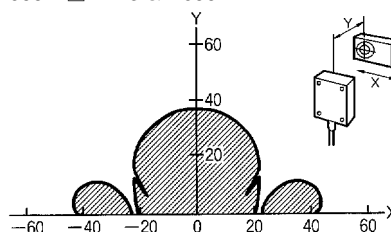
V600-D□KR12 & V600-H07



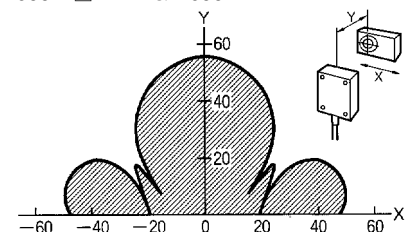
V600-D□KR04 & V600-H11



V600-D□KR13 & V600-H11



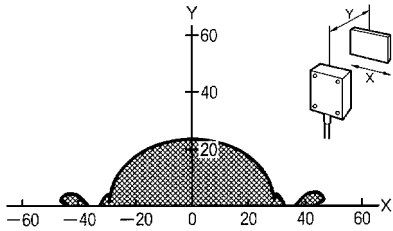
V600-D□KR12 & V600-H11



Note: For DCs with RAM, the read distance is the same as the write distance. These examples are for DCs installed on metal.

Battery-replaceable DCs

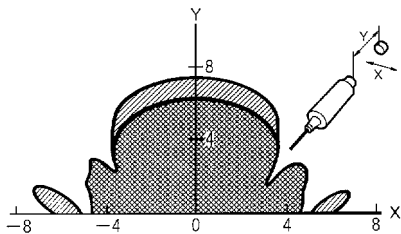
V600-D2KR16 & V600-H11



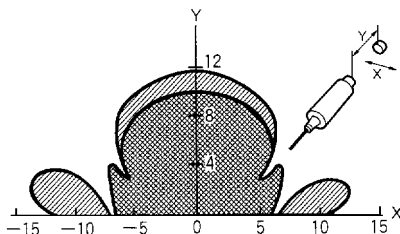
Note: Changing the direction of the DC will change the transmission range.

Battery-less Compact DCs

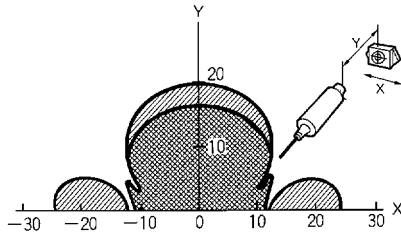
V600-D23P53 & V600-H52



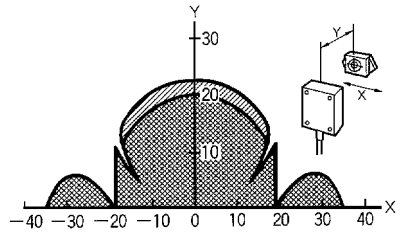
V600-D23P54 & V600-H52



V600-D23P61 & V600-H51



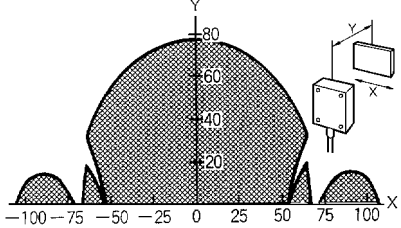
V600-D23P61 & V600-H11



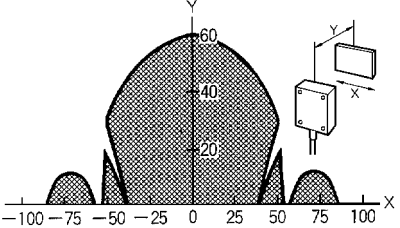
- Read range (in transmission distance priority mode)
- Write range (in transmission distance or transmission time priority mode)
- Read range (in transmission time priority mode)

Card-type DCs

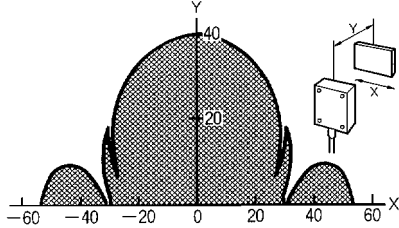
V600-D23P71 & V600-H07



V600-D23P72 & V600-H07



V600-D23P72 & V600-H11



Note: Changing the direction of the DC will change the transmission range.

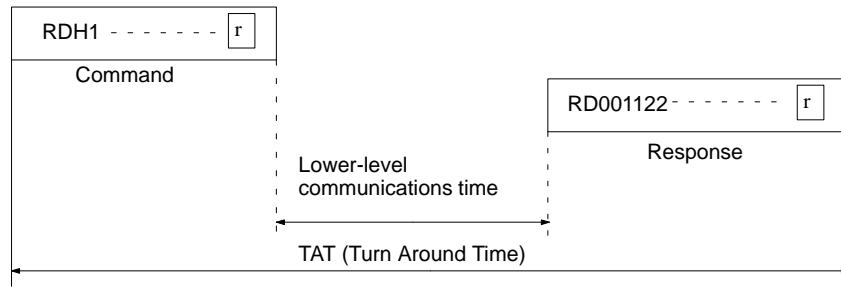
■ Transmission Time Specifications

The transmission time does not depend on the model of R/W Head or Data Carrier, although transmission times differ between Data Carriers with and without batteries.

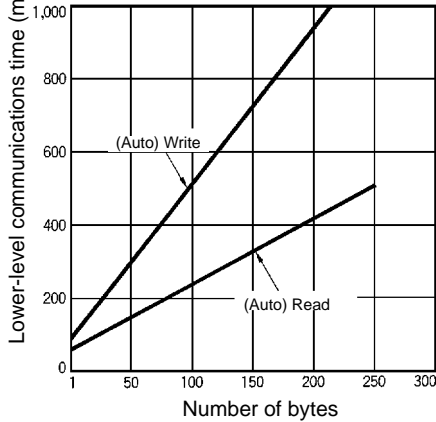
The turn around time (TAT) is the total time required from the issuance of a command from the host device (for example, a host computer) until the reception of a response.

The lower-level communications time does not include the host communications; it is the time required for communications between the R/W Head and Data Carrier. The lower-level communications time is used in the equation for the DC speed.

$$\text{DC Speed} = (\text{Distance travelled in the transmission range}) / (\text{Lower-level communications time})$$

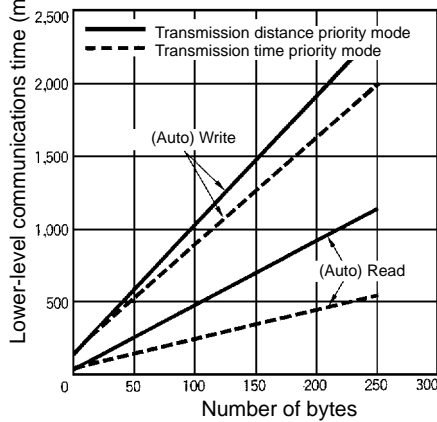


Built-in-battery Data Carriers



Note: The Parallel-interface Controllers and ID Sensor Units will change according to the host software.

Battery-less Data Carriers



■ Lower-level Communications Mode Setting (Distance/Time Priority)

These settings are valid only with Battery-less DCs. The lower-level communications mode setting is made on a DIP Switch on the Serial-interface Controller (V600-CA1A/CA2A/CF1A, or V600-CD1D-V2) or ID Sensor Unit. (Refer to the Controller's *Operation Manual* for more details on this setting.)

With Parallel-interface Controllers (V600-CA8A/CA9A) the mode is fixed to transmission distance priority. With built-in-battery DCs, there is no mode distinction, so either setting can be made.

Calculation

Controller/Item	R/W	Lower-level communications time	TAT
Serial-interface used	READ	$T = 1.8N + 48.4$	$T = 3.0N + 55.9$
	WRITE	$T = 4.2N + 86.5$	$T = 4.2N + 94.1$

Note: 1. The TAT figures are for a V600-CA1A ID Controller and host communications set for 9600 bps, 8 data bits, 1 stop bit, and odd parity. Transmission is continuous without spaces between characters.

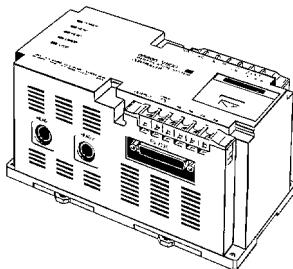
2. N is the number of bytes when the code is set to ASCII code. (Refer to the Controller's *Operation Manual* for details.)

Calculation (Reference)

Controller	R/W	Lower-level communications time	TAT
Distance priority mode	READ	$T = 4.3N + 64.6$	$T = 5.6N + 72.2$
	WRITE	$T = 8.7N + 167.1$	$T = 8.7N + 174.6$
Time priority mode	READ	$T = 1.8N + 79.0$	$T = 3.1N + 86.6$
	WRITE	$T = 7.1N + 180.4$	$T = 7.1N + 187.8$

Note: Except for the TAT data constants, the built-in-battery DCs are the same.

■ V600-CA□A (2 R/W Head Connections) ID Controller (with AC Power Supply)



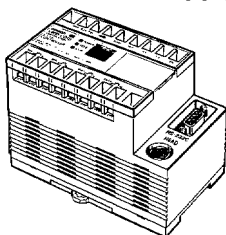
Up to 2 R/W Heads can be connected to the ID Controller. ID Controllers are available with either parallel or serial interfaces for connection to the host device. All data reading and writing operations take place according to commands issued by the host computer or PC.

Superior Diagnostic Functions

In addition to checking hardware during operation, the ID Controller monitors the status of communications between the R/W Head and Data Carriers. Data on the 30 most recent transmission errors is stored. The error data can be read in two ways; information on the most recent error can be read or statistical information on all of the errors can be read. Any errors that occur can be corrected quickly, minimizing the time that the FA ID system is down.

The data can be stored for up to 20 days (at 25°C) in internal memory after a power interruption.

■ V600-CD1D-V2 (1 R/W Head Connection) ID Controller (with DC Power Supply)



● Diagnostics

Item	Specification
Diagnostic functions	Checks for CPU errors, memory errors, power interruptions, and transmission errors

Space-saving Design

The ID Controller dimensions have been reduced to 115×68×80 mm (D×W×H). The connector section has been lowered to eliminate wasted space.

● Input Specifications (RESET, TRIG, IN1, IN2)

Item	Specification
Input voltage	24 VDC +10%/−15% (including ripple)
Input impedance	2.2 kΩ
Input current	10 mA TYP. (24 VDC)
ON voltage	19 V min.
OFF voltage	5 V max.
Input response time	70 ms max.

Numerous I/O

Equipped with synchronous input, processing complete output, and control I/O.

Monitoring Functions

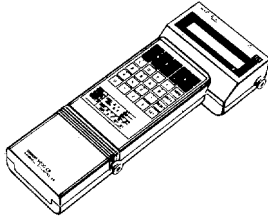
Two 7-segment LED displays are built into the ID Controller to display error codes, completion codes, and the status of I/O points.

● Output Specifications (RUN, CMPL, OUT1, OUT2)

Item	Specification
Maximum switching capacity	100 mA, 24 VDC +10%/−15% (including ripple)
Leakage current	100 μA max.
Residual voltage	2.0 V max.

- Note:** 1. When the RESET input is ON, CPU operation is stopped and the STOP indicator is lit. The RUN output is reset at this time.
2. An output's transistor might fail if the output is short-circuited without a load.

■ V600-CB-US-S/S1 Hand-held ID Controller



The Hand-held ID Controller is a portable Unit that is convenient for onsite use.

The Unit is battery powered, so it can be taken anywhere to transfer data to and from Data Carriers.

Memory Capacity

The Unit is equipped with 32K-bytes of RAM, so it can contain as many as 64 memories (0.5K-bytes/memory) or as large as 16K-byte memories (2 memories) of data.

Data or long commands that are used often (during initialization of Data Carriers, for example) can be converted to memory and then accessed later by specifying the corresponding memory number.






■ ID Controller Specifications ID Controllers

● Battery Charger (V600-A14)


Item	Specification
Power supply voltage	115 VAC, 50/60 Hz
Acceptable power supply voltage	85 to 110 VAC, 50/60 Hz
Charging time	8 hrs (There is a built-in overcharge protection circuit)
Weight	Approx. 400 g

● V600-CB-US-S/S1 Configuration

Model	V600-CB-US-S	V600-CB-US-S1
V600-CB-US V600-A11 V600-A12 V600-A13	Yes	
V600-A14	Yes	No

Item	V600 Series (Electromagnetic FA ID System)				
	V600-CA1A 	V600-CA2A 	V600-CA8A 	V600-CA9A 	V600-CD1D-V2 
Host interface	RS-232C	RS-422	Parallel PNP output	Parallel NPN output	RS-232C
Possible number of R/W Heads	2				1
Power supply voltage	100 to 240 VAC, 50/60 Hz				24 VDC
Acceptable power supply voltage	85 to 264 VAC				20.4 to 26.4 VDC
Power consumption	35 VA max.				7.2 W max.
Insulation resistance	50 MΩ min. between power terminals and case, between I/O terminals and case, or between the power supply terminals and I/O terminals				
Dielectric strength	1,500 VAC, 50/60 Hz for 1 min between the points listed above; Leakage current: 10 mA max.				1,000 VAC, 50/60 Hz for 1 min between the points listed above; Leakage current: 10 mA max.
Noise immunity	1,500 V (p-p) pulses of 100 ns to 1 μs pulse width with a 1 ns rise time				
Vibration resistance	Destruction: 10 to 150 Hz, 0.3-mm double amplitude for 32 min each in X, Y, and Z directions Malfunction: 10 to 150 Hz, 0.2-mm double amplitude for 32 min each in X, Y, and Z directions				
Shock resistance	Destruction: 200 m/s ² (approx. 20G) 3 times each in X, Y, and Z directions				
Ambient temperature	Operating: -10° to 55°C Storage: -25° to 65°C				
Ambient humidity	35% to 85% (with no condensation)				
Operating conditions	No corrosive gases				
Memory back-up	A capacitor backs up the most recent error data and statistical error data for up to 20 days (at 25°C) after a power interruption				Memory is not backed up, but error information can be read from a host computer at start-up
Diagnostic functions	Checks for CPU errors, memory errors, power interruptions, and transmission errors				
Ground	Ground to 100 Ω or less.				
Construction	For inter-panel installation (IP30)				
Weight	Approx. 890 g	Approx. 930 g	Approx. 960 g	Approx. 360 g	

Hand-held ID Controller

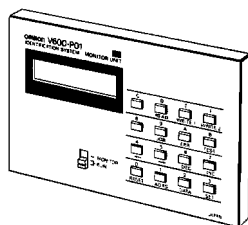
Item	V600-CB-US 
Power supply	Built-in nickel-cadmium batteries (6 VDC) or 9-V alkaline batteries (9 VDC)
Power consumption	700 mA max.
Continuous operating time (see note)	3 hrs min. when using the built-in nickel-cadmium batteries; 1.5 hrs min. when using the alkaline batteries
Automatic power-saver	The power is turned off automatically if a key input or response is not received in 10 min
Automatic command cancellation	A command will be cancelled automatically if a response is not received from a Data Carrier within 2 min
Low battery indicator	This display appears when the battery voltage falls below the minimum voltage required for operation
User memory	32K bytes (Data will be retained for at least 24 hrs after batteries are removed)
Vibration resistance	Destruction: 10 to 150 Hz, 0.15-mm single amplitude for 8 min each in X, Y, and Z directions
Shock resistance	Destruction: 200 m/s ² (approx. 20G) 3 times each in X, Y, and Z directions
Ambient temperature	Operating: 0° to 45°C Storage: -20° to +60°C (excluding the battery pack)
Ambient humidity	Operating: 35% to 85%
Operating conditions	No corrosive gases
Construction	IEC IP30
Weight	680 g max. (including the battery pack)

Note: The continuous operating time is for new, fully charged nickel cadmium batteries or new alkaline batteries used at room temperature.

Monitor Unit

V600-P01 (for use with V600-CA□A Controllers)

The Monitor Unit is a monitoring device that can be mounted to an ID Controller. It can be used to test communications between the R/W Head and Data Carrier when the FA ID System is started up, check the data in Data Carriers, and read error information or statistical error information.



The specifications conform to those of the ID Controller, except the operating temperature range is 0°C to 40°C.

■ SYSMAC ID Sensor Units

V600 Series (Electromagnetic FA ID System)

Wide Variety of Applications

ID Sensor Units (C500 and C200H models) can be mounted directly to OMRON's C-series and CV-series PCs (C200H, C200HS, C500, C1000H, C2000H, CV500, and CV1000 PCs) as Special I/O Units. A long-distance-transmission C500 Sensor Unit is available which can cover a wide area from a single PC. A R/W Head can be extended up to 200 m away when an ID Adapter is used.

Superior Diagnostic Functions

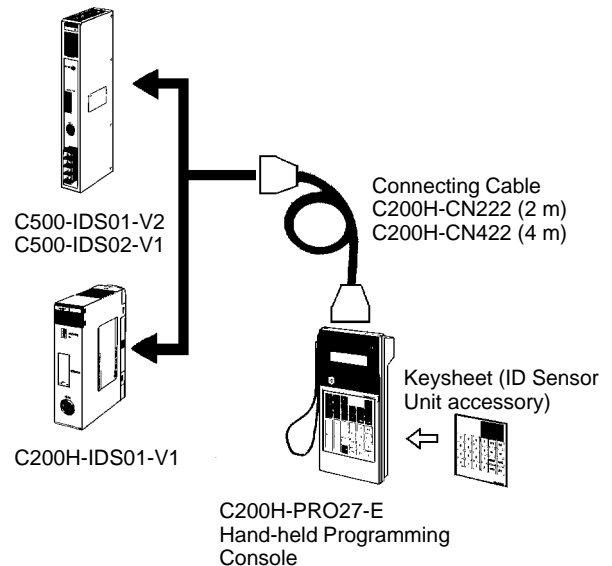
Like ID Controllers, the ID Sensor Units can monitor the status of communications between the R/W Head and Data Carriers and store data on the 30 most recent transmission errors. The error data can be read using a Hand-held Programming Console.

Unified PC Programming

It is easy to control the FA ID System from the PC program, which eliminates the need for an independent program for the ID Sensor Unit.

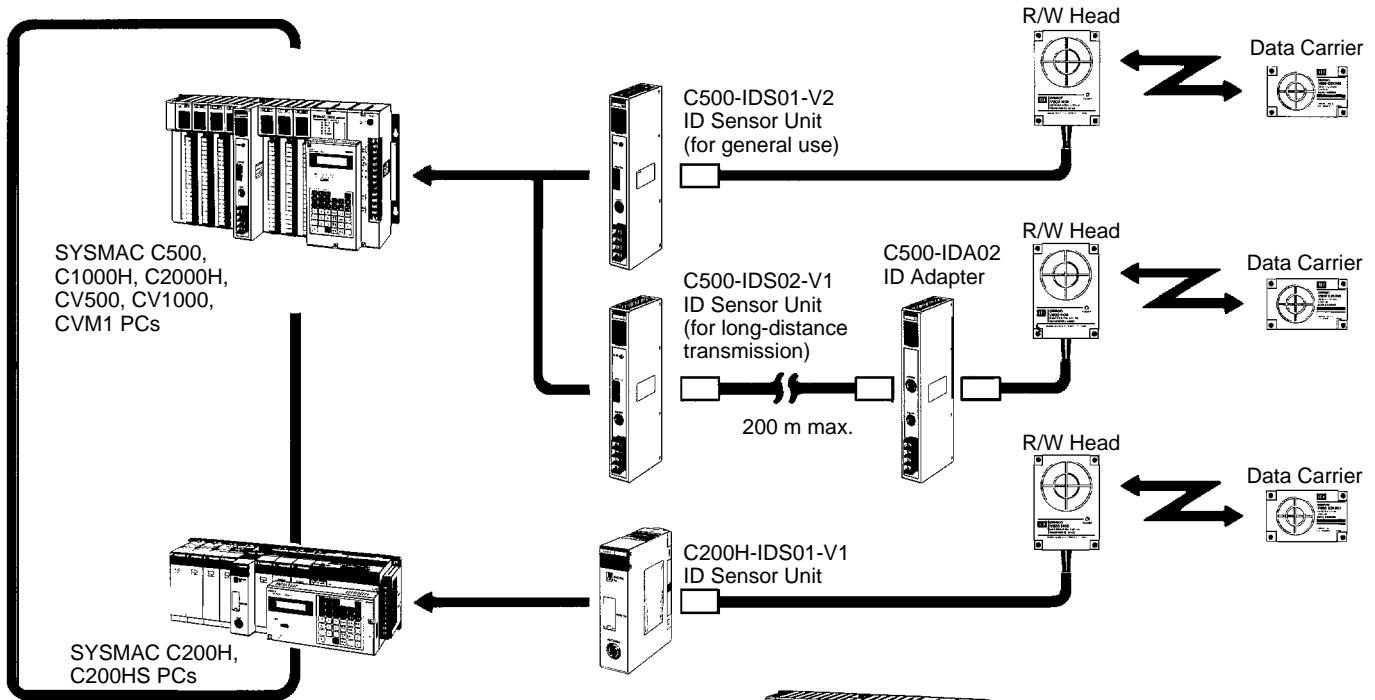
Monitoring Operation with a Hand-held Programming Console

The C200H-PRO27-E Hand-held Programming Console can be connected to the ID Sensor Unit for use as a monitoring device. Attach the special keysheet (an ID Sensor Unit accessory) to the Programming Console when it is used to monitor ID Sensor Unit operation.



System Configuration

There are 3 ID Sensor Unit models, one version for the C200H and C200HS, and two versions for the other C-series and CV-series PCs. A Host Link Unit, SYSMAC LINK Unit, or SYSMAC NET Link Unit can also be mounted to construct a Host Link System, SYSMAC LINK System, or SYSMAC NET Link System.



High-speed Data Transfer

Most PC CPUs are equipped with the Intelligent I/O Read and Intelligent I/O Write instructions (READ and WRIT) which can be used to transfer up to 502 bytes of data (251 words) at high-speed between the ID Sensor Unit and PC. These instructions cannot be used if the ID Sensor Unit is mounted to a Slave Rack. If the Intelligent I/O instructions are used, 2 words will be allocated to the ID Sensor Unit, if these instructions are not used, 4 words will be allocated.

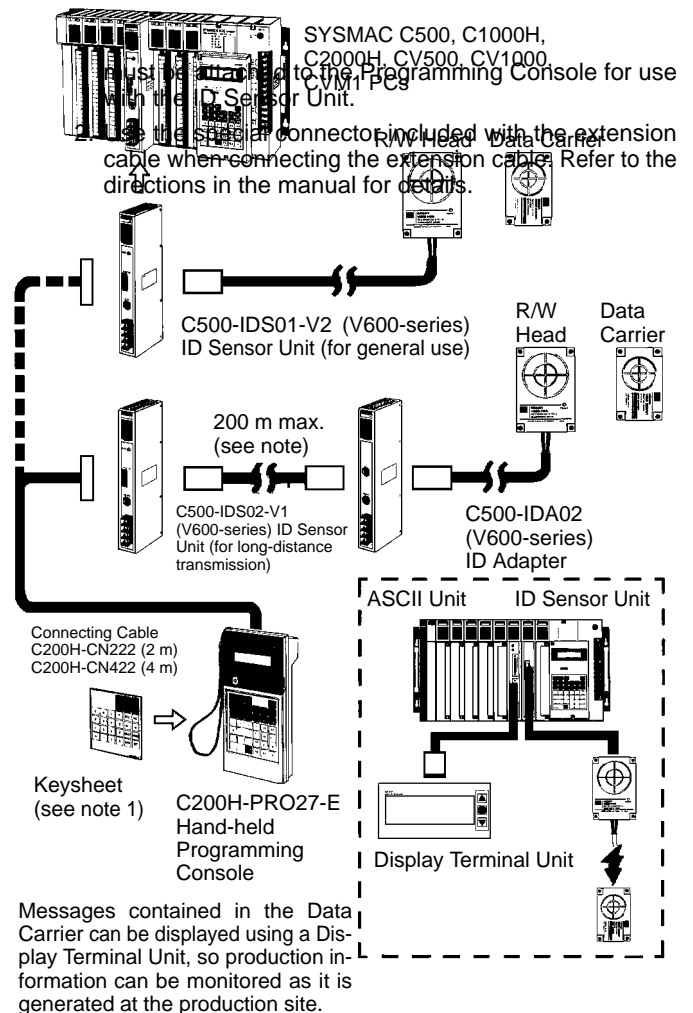
Long-distance Transmission (C500-IDS02-V1)

The C500-IDS02-V1 ID Sensor Unit is very useful for long production lines, since the distance to the R/W Heads can be extended up to 200 m. This ID Sensor Unit is always used together with the C500-IDA02 ID Adapter.

ID Adapter

A C500-IDA02 ID Adapter is always required when a long-distance C500-IDS02-V1 ID Sensor Unit is used. The ID Adapter can be mounted to a C500 Rack; in this case, the ID Adapter will not consume the Rack's 5 VDC power and it will not be allocated I/O words. The ID Adapter can be operated as a stand-alone Unit if it is supplied with 24 VDC power (450 mA min.).

Note: 1. The special keysheet (an ID Sensor Unit accessory)



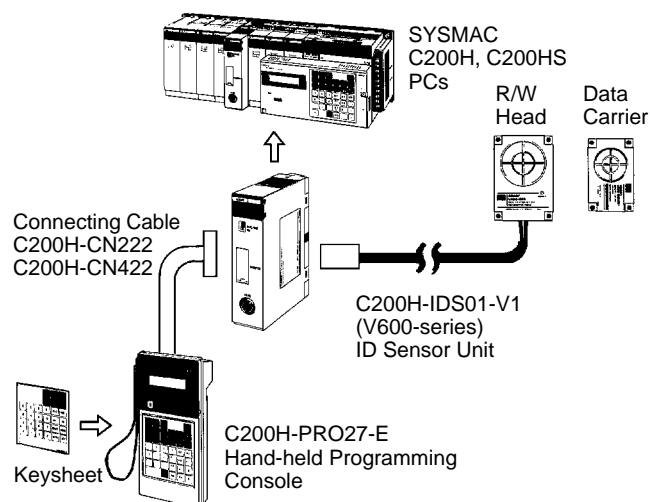
C200H-IDS01-V1 ID Sensor Unit

The C200H-IDS01-V1 ID Sensor Unit is treated as a Special I/O Unit, so it can be mounted on a C200H or C200HS CPU Rack, Expansion I/O Rack, or Slave Rack. There are some limitations on the installation of Special I/O Units; for example, a maximum of 10 Units can be connected to one CPU.

Note: Refer to PC's *Installation Guide* for more details.

Communications with the C200H/C200HS

The C200H-IDS01-V1 can read or write up to 1024 bytes (512 words) of data, however, the C200H/C200HS CPUs can take in only 20 words/cycle.



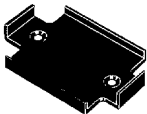

ID Sensor Unit Specifications

Item	C500-IDS01-V2 (for general use) C500-IDS02-V1 (for long-distance transmission)	C200H-IDS01-V1
Communications control	Dedicated time sharing	
Possible number of R/W Heads	1 R/W Head	
Compatible Data Carriers	2K-byte and 8K-byte RAM DCs (with battery), 256-byte EEPROM DCs (without battery)	
DC memory format	8-bit dedicated format	
Commands	The following 7 commands are used: Read, Write, Auto read, Auto write, Abort, Cancel auto-command, Data management processing	
Transmission capacity	Up to 502 bytes (201 words) of data can be batch-transferred using the Intelligent I/O instructions (READ/WRIT)	Up to 1024 bytes (512 words) of data can be transferred (at 20 words/PC cycle)
Diagnostic functions	1. CPU watchdog timer 2. Detects transmission error with DC, absence of DC 3. Error log function, records transmission errors (with capacitor back-up)	
Monitoring functions	A Hand-held Programming Console (with a special keysheet) can be used to monitor operation (max. cable length: 4 m). The following operations are possible: Read 1-byte, Write 1-byte, Continuous write, Test, and Monitor error log	
Memory back-up	The error information has a capacitor back-up. Data retained at least 15 days (at 25°C).	
I/O word allocation	Two words are allocated when the Intelligent I/O instructions (READ/WRIT) are used Four words are allocated when the Intelligent I/O instructions (READ/WRIT) are not used (selectable)	Five words are allocated within the Special I/O (IR) area (IR 100 to IR 199)
External power supply	250 mA min. at 24 VDC	---
Internal current consumption	400 mA max. at 5 VDC	250 mA max. at 5 VDC 120 mA max. at 26 VDC (to drive the R/W Head) (see note)
Weight	700 g max.	400 g max.
Dimensions	34.5 × 250 × 93 (W × H × D)	35 × 130 × 100.5 (W × H × D)



Note: Supply 26 VDC to the R/W Head and R/W Antenna. Refer to the *C200H and C200HS Installation Guides (W111, W218, W236)* and design the system by taking the total current consumption of the Units into account.

■ Accessories (Sold Separately)

Data Carrier Mounting Brackets



Model	Compatible DCs	Remarks
V600-A81 	V600-D2KR16 	Secure with at least two M3 flat-head screws.

Data Carrier Battery Replacement Kit

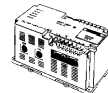

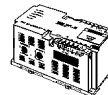
Model	Compatible DCs	Remarks
V600-A82 Lithium battery (see note) 	V600-D2KR16 	Commercially available CR2016 battery.

Note: The Data Carrier Battery Replacement Kit includes a battery (CR2016), battery cover, and battery cover seal. This kit will ensure that the Data Carrier meets IP50 environmental resistance standards after battery replacement.

RS-232C Cable

Model	Cable length	Compatible ID Controllers
XW2Z-200P	2 m	V600-CA1A 
XW2Z-500P	5 m	
XW2Z-200S	2 m	V600-CD1D-V2 
XW2Z-200S	5 m	

Connectors for ID Controllers

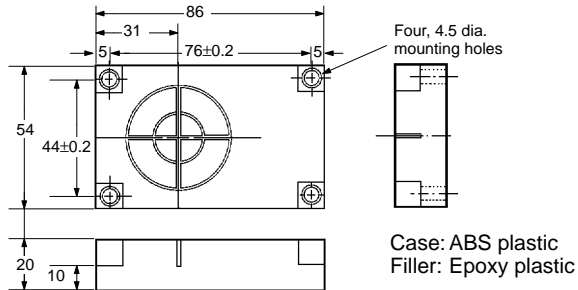
Model	Name	Compatible ID Controllers
XM2A-0901	Connector Plug	V600-CA2A V600-CD1D-V2 
XM2S-0911	Connector Hood	
XM2A-2501	Connector Plug	V600-CA1A 
XM2S-2511	Connector Hood	
Accessories	Connector Plug	V600-CA8A V600-CA9A 
	Connector Hood	

■ Dimensions

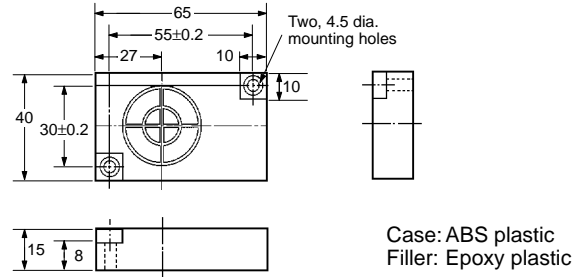
Data Carriers

Built-in-battery DCs

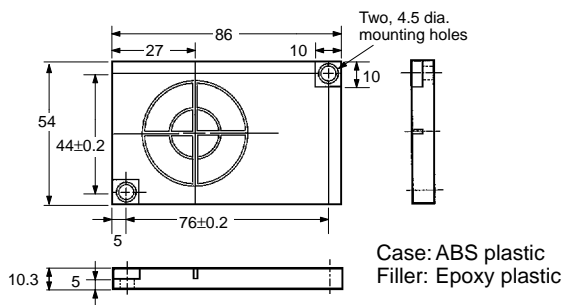
V600-D□KR01/D□KR11



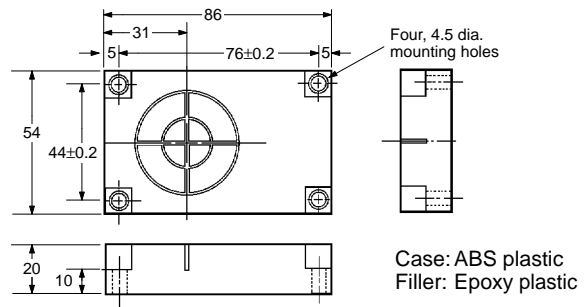
V600-D□KR02/D□KR12



V600-D□KR03/D□KR13

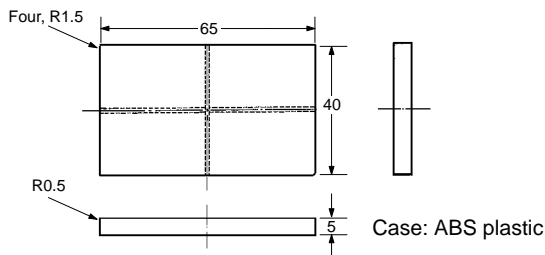


V600-D□KR04



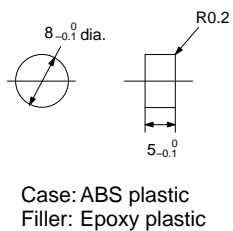
Replaceable-battery DCs

V600-D2KR16

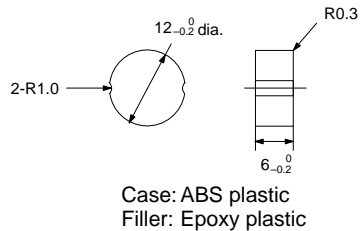


Battery-less DCs

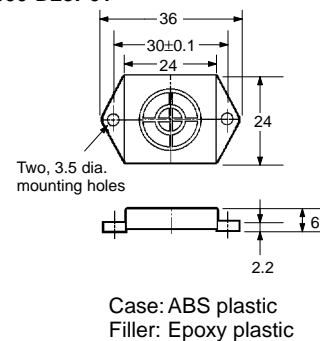
V600-D23P53



V600-D23P54

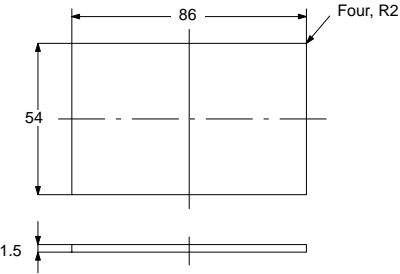


V600-D23P61



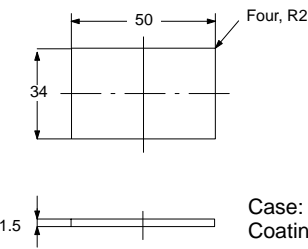
Battery-less Card-type DCs

V600-D23P71



Case: Glass epoxy plastic
Coating: Polyurethane plastic

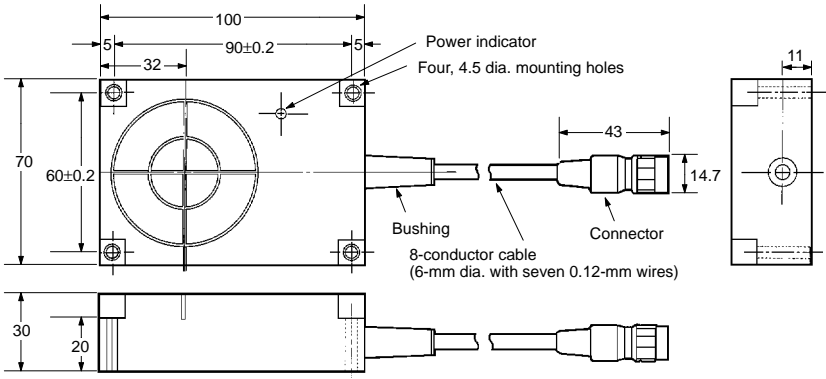
V600-D23P72



Case: Glass epoxy plastic
Coating: Polyurethane plastic

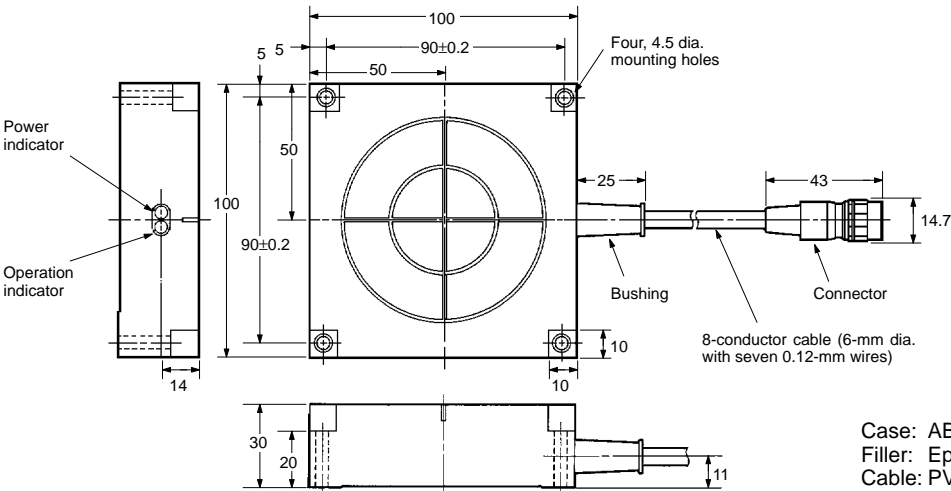
R/W Heads

V600-H06/H12



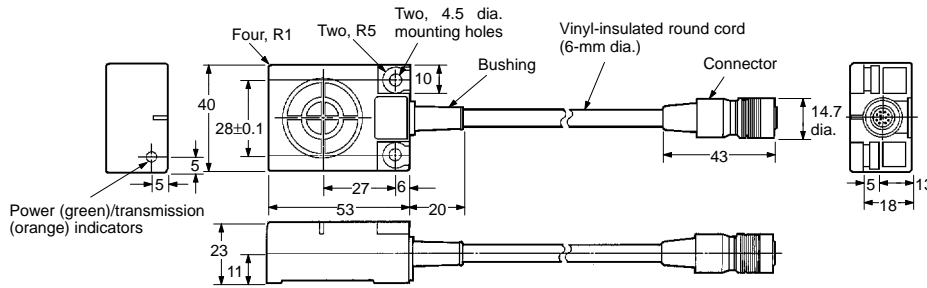
Case: ABS plastic
Filler: Epoxy plastic
Cable: PVC (oil-resistant)

V600-H07



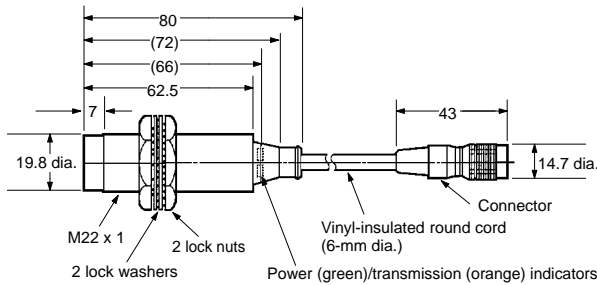
Case: ABS plastic
Filler: Epoxy plastic
Cable: PVC (oil-resistant)

V600-H11



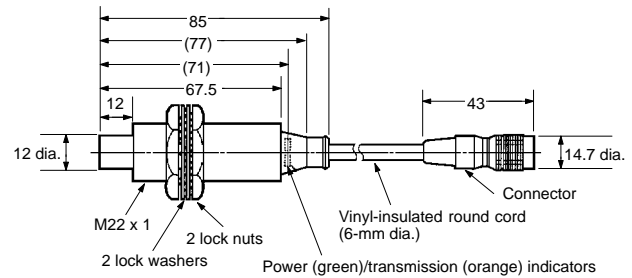
Case: ABS plastic
 Filler: Epoxy plastic
 Cable: PVC (oil-resistant)

V600-H51



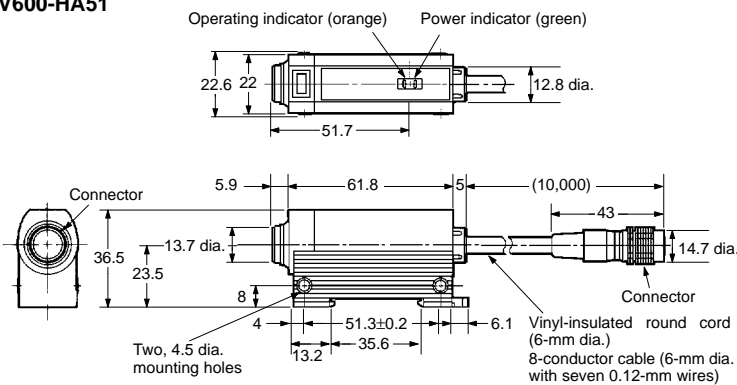
Case: Brass
 Transmission window: ABS plastic
 Filler: Epoxy plastic
 Cable: PVC (oil-resistant)

V600-H52



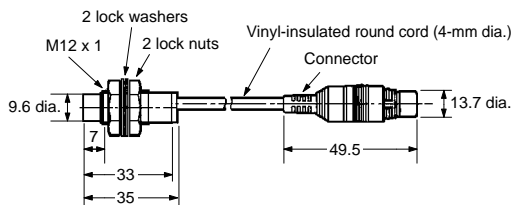
Case: Brass
 Transmission window: ABS plastic
 Filler: Epoxy plastic
 Cable: PVC (oil-resistant)

V600-HA51



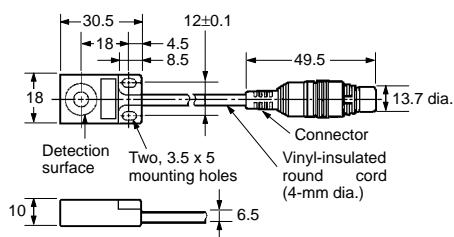
Case: ABS plastic
 Filler: Epoxy plastic
 Cable: PVC (oil-resistant)

V600-HS51



Case: Brass
 Transmission window: ABS plastic
 Filler: Epoxy plastic
 Cable: PVC (oil-resistant)

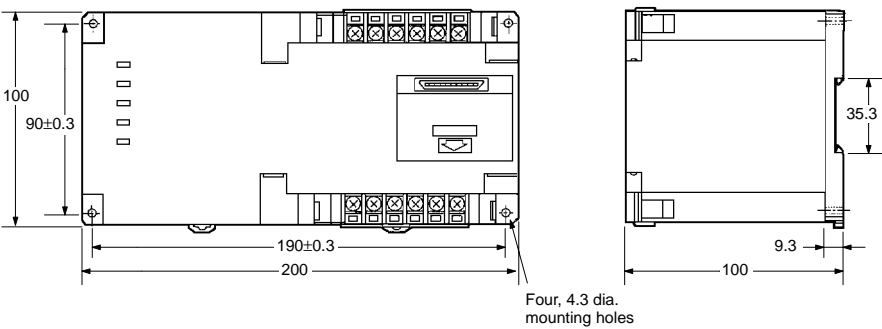
V600-HS61



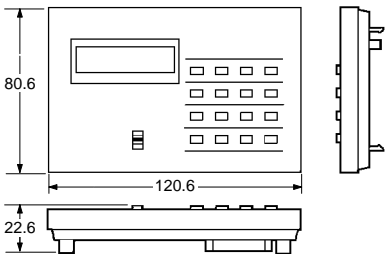
Case: ABS plastic
 Filler: Epoxy plastic
 Cable: PVC (oil-resistant)

ID Controllers

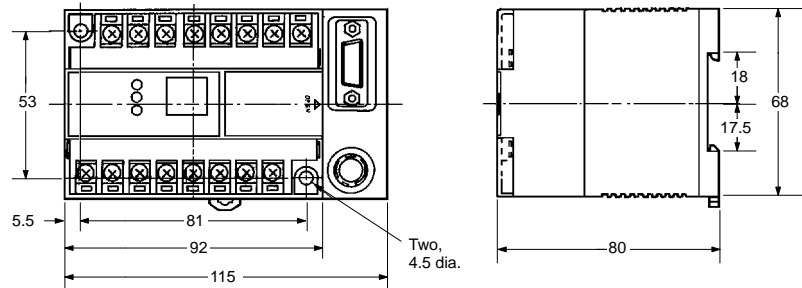
V600-CA□A (Multipurpose)



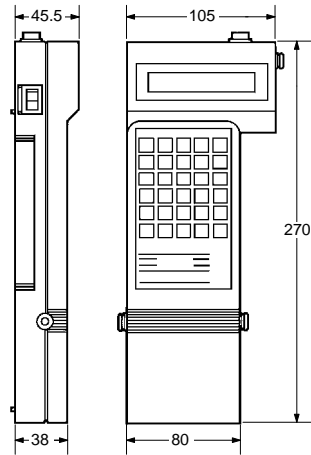
V600-P01 Monitor Unit
(For use with V600-CA□A and V620-CA□A Controllers)



V600-CD1D-V2 (Compact)

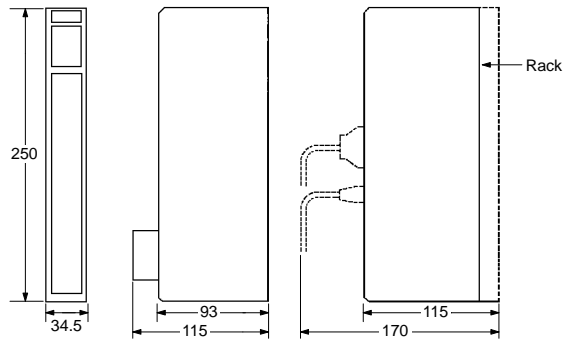
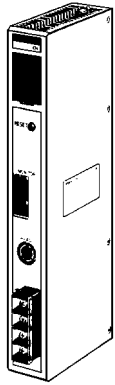


V600-CB-US-S Hand-held ID Controller

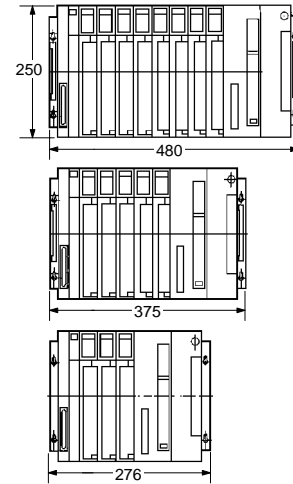


ID Sensor Units

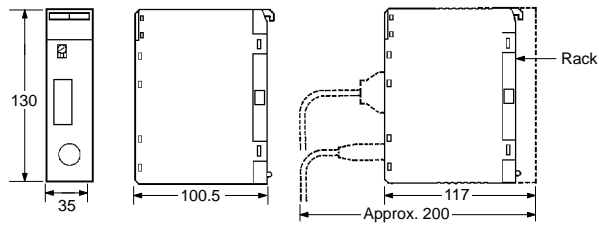
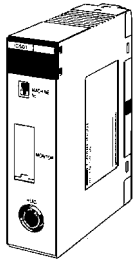
C500-IDS01-V2
C500-IDS02-V1
C500-IDA02



Rack Dimensions (Reference)



C200H-IDS01-V1



Rack Dimensions (Reference)

